Problem H-101. For the purposes of this problem, a “word” is any ordered sequence of letters, regardless of whether they are actual English words. It’s a “string” in computer science. Also for this problem, a “repeated letter” just means the letter occurs more than once in the word; it does not require that the repetitions be consecutive.

(a) How many rearrangements are there of the letters in CLASSICAL?

(b) How many rearrangements of CLASSICAL are palindromes (that is, they stay the same when reversed)?

(c) How many 3 letter words can be made from the letters of CLASSICAL if no repeated letters are allowed?

(d) How many 3 letter words can be made from the letters of CLASSICAL if repeated letters are allowed but no letter can be used more often than it appears in CLASSICAL?

(e) How many 3 letter words can be made from the alphabet \{C,L,A,S,I\} if repeated letters are allowed and there is no restriction on the number of repetitions?